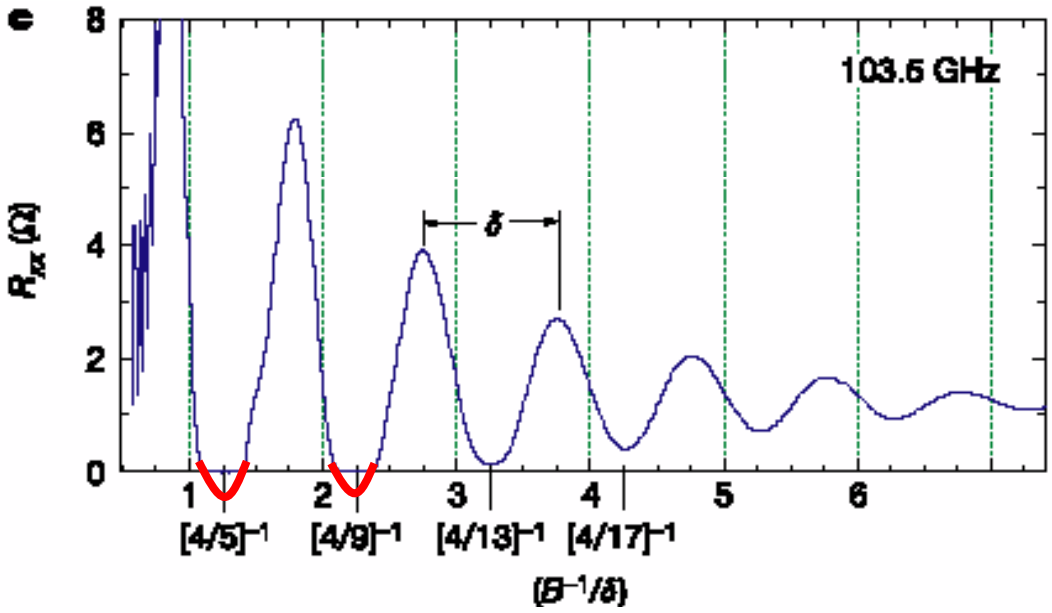
Interaction Effects in Low-Dimensional Disordered Systems

Anton Andreev, University of Colorado, Boulder, DMR-9984002

Two experimental groups [Mani et al. *Nature.* **420**, 646 (2002); M.Zudov et al. PRL **90,** 046807 (2003)] recently observed a novel zero-resistance state (ZRS) in two-dimensional electron systems subjected to microwave radiation. Instead of turning negative resistance oscillations saturate at zero resulting in ZRS. In collaboration with A. Millis and I. Aleiner (Columbia) I showed that negative resistivity regions are unstable: Spontaneous currents appear in the sample which leads to the formation of ZRS. [PRL **91,** 056803 (2003]



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Education:
One graduate student (Dmytro Pesin), two postdocs (Igor Beloborodov, presently Enrico Fermi postdoc at Argonne National Lab, and Eugene Mishchenko, presently postdoc at Harvard) received training in condensed matter theory.

Broader impact:
The PI organized a condensed matter seminar at the University of Colorado. This seminar brings together and fosters communication between the condensed matter physicists from NIST, Boulder, JILA, and CU.